

DISPENSE PUMP WITH HEATED PUMP HOUSING  
AND HEATED MATERIAL RESERVOIR

ABSTRACT OF THE DISCLOSURE

5           A heated dispense pump overcomes the limitations of conventional systems providing  
for reliable and efficient heating of the dispensed material in a system that is compact,  
lightweight, and accurate. A pump housing and cartridge body are formed of a thermally  
conductive material such as copper, aluminum, or an alloy combination thereof. A heater  
element is applied directly to the body of the pump housing, and a thermocouple is included to  
10   provide for closed-loop controllability. The material flows through the cartridge body and is  
heated prior to release at the dispense tip. The heated elements, including the pump housing  
and cartridge body, are thermally insulated from the pump motor and pump gantry to prevent  
the escape of heat from the system and to protect those adjacent components from heat  
damage. An optional syringe heater is provided for heating the material in the syringe, and for  
15   controlling the temperature of the material, in closed-loop fashion. In this manner, the  
temperature of the material in the syringe and the temperature of the material in the pump can  
be controlled independently of each other.

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